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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/687,742	10/20/2003	Jun Koyama	0756-7212	9253

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EXAMINER	
LUI, DONNA V	

ART UNIT	PAPER NUMBER
2629	

DATE MAILED: 05/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/687,742	KOYAMA, JUN	
	Examiner	Art Unit	
	Donna V. Lui	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 January 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10/20/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. **Claims 1, 2, 16, 17, 21, 22, 26, and 27** are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 2, 9, 10, 13, 14, 17, and 18 of copending Application No. 10/687,655. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1, 2, 16, 17, 21, 22, 26, and 27 of the instant application correspond respectively to claims 1, 2, 9, 10, 13, 14, 17, and 18 of Application No. 10/687,655, where the switching regulator control circuit performs the same function as the charge pump control circuit and are therefore equivalents. With respect to claim 2 of Application No. 10/687,655 the capacitor is not in claim 2 of the instant application

but it is obvious to have a capacitor to be able to raise or lower the voltage through the switching regulator. Dependent claims 16, 17, 21, and 22 of the instant application are identical to dependent claims 9, 10, 13, and 14 of Application No. 10/687,655. Dependent claims 26 and 27 of the instant application differ only in that the instant application has the limitation "a DVD player, a folding portable display device, ... and a mobile telephone" whereas dependent claims 17 and 18 of Application No. 10/687,655 has the limitation "a DVD playback device, a folding portable information device, ... and a mobile phone", but are essentially equivalents.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

This application 10/687,742	Application 10/687,655
Claim 1	Claim 1
A display device comprising:	A display device comprising:
A switching regulator control circuit comprising a thin film transistor on a substrate.	A charge pump control circuit comprising a thin film transistor on a substrate.
Claim 2	Claim 2
A display device comprising:	A display device comprising:
A switching regulator control circuit comprising a thin film transistor on a substrate.	A charge pump control circuit comprising a thin film transistor on a substrate.
	A switching element; and
	A capacitor,
Wherein a switching element is driven according to an output signal from said switching regulator control circuit to raise or lower the voltage.	Wherein the switching element is driven correspondingly to an output signal of the charge pump control circuit to step a voltage up or down.

Priority

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Objections

4. **Claims 26-30** are objected to because of the following informalities: grammatical error, examiner would like to suggest the following for correction.

Line 2 of claims 26-30: to electronic equipment selected from the group consisting of a digital camera, a

Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. **Claims 1, 11, and 16** are rejected under 35 U.S.C. 102(b) as being anticipated by Matsueda (Pub. No.: US 2002/0145602 A1).

With respect to **Claim 1**, Matsueda discloses a display device *(See figure 1)* comprising: a switching regulator control circuit comprising a thin film transistor on a substrate *(See figure 1,*

element 6: switching regulator control circuit = TFT; [0069], lines 6-8, the TFT regulates the power supply to the pixel through signal line 4).

With respect to **Claim 11**, Matsueda teaches a display device according to claim 1, wherein a plurality of switching regulator control circuits are formed on the substrate *([0076], lines 5-9).*

With respect to **Claim 16**, Matsueda teaches a display device according to claim 1, wherein the display device is a liquid crystal display device *([0069], lines 1-3).*

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. **Claims 2-3, 6, 12-13 and 17-18** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakurai et al. (Pub. No.: US 2002/0175662 A1).

With respect to **Claim 2**, Sakurai teaches a display device *(See figure 5 and figure 3 where figure 3 is equivalent to element 100)* comprising: a switching regulator control circuit *(See figure 3, switching regulator control circuit ~ DC/DC converter control circuit and element*

34) comprising a transistor *(element Q1)* on a substrate, wherein a switching element *(element Q2)* is driven according to an output signal from the switching regulator control circuit to raise or lower the voltage *(See figure 3, [0087]).*

Although Sakurai uses a transistor, it would have been obvious for a person of ordinary skill in the art at the time the invention was made to use a thin film transistor in the switching regulator control circuit of Sakurai so as to provide higher reliability and faster response time as characteristic of a thin film transistor.

With respect to **Claim 3**, Sakurai teaches a display device comprising *(See figure 5 and figure 3 where figure 3 is equivalent to element 100)*: a switching regulator control circuit *(See figure 3, switching regulator control circuit ~ element 34 and 70)* comprising a transistor *(element Q1)* on a substrate; a switching element *(element Q2)*; an inductor *(L1)*; a diode *(D1)*; and a smoothing capacitor *(C2)*, wherein said switching regulator control circuit comprises: a voltage feed back circuit which feeds back a voltage of the smoothing capacitor *([0035])*; and a duty control circuit which controls a switching duty of the switching element *(See figure 3, duty control circuit ~ DC/DC converter control circuit).*

Although Sakurai uses a transistor, it would have been obvious for a person of ordinary skill in the art at the time the invention was made to use a thin film transistor in the switching regulator control circuit of Sakurai so as to provide higher reliability and faster response time as characteristic of a thin film transistor.

With respect to **Claim 6**, Sakurai teaches a display device according to claim 3, wherein the switching element is made up of a transistor *(See figure 3, switching element ~ Q2)*.

Although Sakurai uses a transistor, it would have been obvious for a person of ordinary skill in the art at the time the invention was made to use a thin film transistor as the switching element in the display device of Sakurai so as to provide higher reliability and faster response time as characteristic of a thin film transistor.

With respect to **Claims 12 and 13**, Sakurai teaches a display device according to claims 2 and 3, wherein a plurality of switching regulator control circuits are formed on the substrate *(See figure 5 and figure 3 where element 11 in figure 3 replaces element 100 in figure 5 and it is obvious that an active matrix type [0007] substrate is used for the switching regulator control circuits)*.

With respect to **Claims 17 and 18**, Sakurai teaches a display device according to claims 2 and 3, wherein the display device is a liquid crystal display device *([0066])*.

9. **Claims 7, 9-10, 14-15, 19-20** are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomio et al. (Pub. No.: US 2002/0044145 A1).

With respect to **Claim 7**, Tomio teaches a display device *(See figure 5)* comprising: a switching regulator control circuit *(elements 40 and 50)* comprising transistors on a substrate, wherein the switching regulator control circuit uses an analog signal *([0077], lines 1-3; analog*

signals ~ VAK, VWK, VEK, VSK). Although Tomio uses a transistor *(figure 8: element 50; Tr71 – Tr73)*, it would have been obvious for a person of ordinary skill in the art at the time the invention was made to use a thin film transistor in the switching regulator control circuit of Tomio so as to provide higher reliability and faster response time as characteristic of a thin film transistor.

With respect to **Claim 9**, Tomio teaches a display device *(See figure 5)* comprising: a switching regulator control circuit *(elements 40 and 50)* comprising transistors on a substrate, wherein the switching regulator control circuit uses a digital signal *([0077], lines 1-3; analog signals ~ VAK, VWK, VEK, VSK are converted into digital signals)*. Although Tomio uses a transistor *(figure 8: element 50; Tr71 – Tr73)*, it would have been obvious for a person of ordinary skill in the art at the time the invention was made to use a thin film transistor in the switching regulator control circuit of Tomio so as to provide higher reliability and faster response time as characteristic of a thin film transistor.

With respect to **Claim 10**, Tomio teaches a display device according to claim 9, wherein the switching regulator control circuit comprises an AD converter circuit *(See figure 6A, A/D)*, a CPU *(See figure 5, element 40)*, and a pulse generation circuit *(element 21 and 23; [0050])*.

With respect to **Claims 14 and 15**, Tomio teaches display device according to claims 7 and 9, wherein a plurality of switching regulator control circuits are formed on the substrate *([0019])*.

With respect to **Claims 19 and 20**, Tomio teaches a display device according to claim 7, wherein the display device is a liquid crystal display device *([0003])*.

10. **Claim 4** is rejected under 35 U.S.C. 103(a) as being unpatentable over Sakurai, as applied to claim 3 above, and further in view of Saito et al. (Pub. No.: US 2002/0158590 A1).

With respect to **Claim 4**, Sakurai does not teach a display device wherein the inductor, the diode, and the smoothing capacitor are packed on an FPC.

Saito teaches an inductor, diode and capacitor *(See figure 3, elements 303, 315, and 317)* packed on a flexible printed circuit *(FPC, [0032])*.

It would have been obvious for a person of ordinary skill in the art at the time the invention was made to have an inductor, diode, and smoothing capacitor packed on a FPC, as taught by Saito, to the display device of Sakurai, so as to ensure high insulating performance, and to improve the characteristics and reliability of the device *([0032], last three lines)*.

11. **Claim 5** is rejected under 35 U.S.C. 103(a) as being unpatentable over Sakurai, as applied to claim 3 above, and further in view of Nakajima (Pub. No.: US 2003/0011586 A1).

With respect to **Claim 5**, Sakurai does not teach a display device wherein the inductor, the diode, and the smoothing capacitor are packed on a TFT substrate.

Nakajima teaches a circuit is formed on a glass substrate by using thin film transistors *([0019], lines 3-4).*

It would have been obvious for a person of ordinary skill in the art at the time the invention was made to pack an inductor, diode, and smoothing capacitor on a TFT substrate as taught by Nakajima, to the display device of Sakurai, so as to provide inferior crystalinity and inferior controllability of the conducting mechanism *([0019], lines 3-9).*

12. **Claim 8** is rejected under 35 U.S.C. 103(a) as being unpatentable over Tomio, as applied to claim 7 above, in view of Yu (Pub. No.: Us 2003/0201967 A1).

With respect to **Claim 8**, Tomio teaches a display device wherein the switching regulator control circuit comprises a reference voltage source *(See figure 7, element 52)*, a triangle wave generation circuit *(element 54)*, and a PWM comparator *(figure 7, element 53 and figure 8, element 2).*

Tomio does not mention an error amplifier circuit.

Yu teaches a switching regulator control circuit comprising a reference voltage source *(figure 3, Vref; [0033], last two lines)*, a triangle wave generation circuit *(figure 3, element 336; [0030], lines 1-2)*, an error amplification circuit *(figure 3, element 303; [0033], last three lines)* and a PWM comparator *(figure 3, element 302; [0033], last three lines).*

Yu modifies Tomio by replacing the switching regulator control circuit (Tomio: figure 7, internal power supply circuit) with that of Yu (control integrated circuit) as shown in figure 3 since the control integrated circuit provides the same function for stabilization of current.

It would have been obvious for a person of ordinary skill in the art at the time the invention was made to use a switching regulator circuit, as taught by Yu to the display device of Tomio so as to provide stabilization of current *([0010])*.

13. **Claims 21 and 26** are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsueda, as applied to claim 1 above, and further in view of Nakajima.

With respect to **Claim 21**, Matsueda does not teach the display device is an EL display device.

Nakajima teaches a circuit can be implemented in both an LCD display and an EL display device *([0181])*.

It would have been obvious for a person of ordinary skill in the art at the time the invention was made to implement a circuit in an LCD and EL display device, as taught by Nakajima, in the display device of Matsueda so as to provide a versatile circuit that can be implemented in more than one type of display.

With respect to **Claims 26**, Matsueda does not teach the display device is applied to electronic equipment selected from the group comprising of a digital camera, a notebook type personal computer, a PDA, a DVD player, a folding portable display device, a watch type display device and a mobile telephone.

Nakajima teaches the display device is applied to electronic equipment selected from a group comprising a display unit of portable terminals such as telephones and PDAs *([0182])*.

It would have been obvious for a person of ordinary skill in the art to have the display device applied to electronic equipment selected from a group comprising a display unit of portable terminals such as telephones and PDAs, as taught by Nakajima to the display device of Matsueda, so as to provide a display device that is versatile and can be implemented in a plurality of devices.

14. **Claims 22-23 and 27-28** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakurai, as applied to claims 2 and 3 above, and further in view of Nakajima.

With respect to **Claims 22 and 23**, Sakurai does not teach the display device is an EL display device.

Nakajima teaches a circuit can be implemented in both an LCD display and an EL display device *([0181])*.

It would have been obvious for a person of ordinary skill in the art at the time the invention was made to implement a circuit in an LCD and EL display device, as taught by Nakajima, in the display device of Sakurai so as to provide a versatile circuit that can be implemented in more than one type of display.

With respect to **Claims 27 and 28**, Sakurai does not teach the display device is applied to an electronic equipment selected from the group consisting of a digital camera, a notebook type personal computer, a PDA, a DVD player, a folding portable display device, a watch type display device and a mobile telephone.

Nakajima teaches the display device is applied to electronic equipment selected from a group comprising a display unit of portable terminals such as telephones and PDAs *([0182])*.

It would have been obvious for a person of ordinary skill in the art to have the display device applied to electronic equipment selected from a group comprising a display unit of portable terminals such as telephones and PDAs, as taught by Nakajima to the display device of Sakurai, so as to provide a display device that is versatile and can be implemented in a plurality of devices.

15. **Claims 24-25 and 29-30** are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomio, as applied to Claims 7 and 9 above, and further in view of Nakajima.

With respect to **Claims 24 and 25**, Tomio does not teach the display device is an EL display device.

Nakajima teaches a circuit can be implemented in both an LCD display and an EL display device *([0181])*.

It would have been obvious for a person of ordinary skill in the art at the time the invention was made to implement a circuit in an LCD and EL display device, as taught by Nakajima, in the display device of Tomio so as to provide a versatile circuit that can be implemented in more than one type of display.

With respect to **Claims 29 and 30**, Tomio does not teach the display device is applied to an electronic equipment selected from the group consisting of a digital camera, a notebook type

personal computer, a PDA, a DVD player, a folding portable display device, a watch type display device and a mobile telephone.

Nakajima teaches the display device is applied to electronic equipment selected from a group comprising a display unit of portable terminals such as telephones and PDAs *([0182])*.

It would have been obvious for a person of ordinary skill in the art to have the display device applied to electronic equipment selected from a group comprising a display unit of portable terminals such as telephones and PDAs, as taught by Nakajima to the display device of Tomio, so as to provide a display device that is versatile and can be implemented in a plurality of devices.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donna V. Lui whose telephone number is (571) 272-4920. The examiner can normally be reached on Monday through Friday 8:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571)272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Donna V Lui
Examiner
Art Unit 2629

AMR A. AWAD
PRIMARY EXAMINER